



WILLIAM T FUJIOKA
Chief Executive Officer

County of Los Angeles CHIEF EXECUTIVE OFFICE

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January 22, 2013

To: Supervisor Mark Ridley-Thomas, Chairman
Supervisor Gloria Molina
Supervisor Zev Yaroslavsky
Supervisor Don Knabe
Supervisor Michael D. Antonovich

From: William T Fujioka
Chief Executive Officer

A handwritten signature in black ink, appearing to read "W. T. Fujioka", is written over the printed name of the Chief Executive Officer.

Board of Supervisors
GLORIA MOLINA
First District

MARK RIDLEY-THOMAS
Second District

ZEV YAROSLAVSKY
Third District

DON KNABE
Fourth District

MICHAEL D. ANTONOVICH
Fifth District

LOS ANGELES COUNTY DISASTER RECOVERY DATA CENTER FINAL REPORT (Item 10, Agenda of May 15, 2012)

On May 15, 2012, the Board, on motion of Supervisor Knabe, instructed the Chief Executive Office (CEO), in conjunction with the Chief Information Officer (CIO) and the Director of the Internal Services Department (ISD), to:

1. Report back within 30 days with a preliminary report on a recommended site, cost estimates, expedited project timeline and funding or financing approach to create a County disaster recovery center to be used by all County departments;
2. Explore other options outside of constructing a facility, i.e., a "cloud"; analyzing how the County might achieve economies-of-scale, and easier manageability and maintenance, while ensuring a secure environment for the County's critical data;
3. Include in the report operational and energy efficiencies, cost savings and/or cost avoidance associated with the project; and
4. Develop directives and policies needed to implement a County Disaster Recovery Center.

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We provided the Board with status reports on June 18, 2012, and August 22, 2012. On November 8, 2012, we advised the Board of work in progress, and committed to provide a recommendation for a scalable DR data center solution by January, 2013.

SUMMARY

After review of various sites, the County team comprised of ISD, CIO and CEO recommends ISD's Eastern Avenue warehouse as the site for a new County disaster recovery (DR) data center. The Eastern Avenue warehouse is more economically adaptable to data center use than the other sites reviewed, and is scalable to meet projected countywide DR data center needs.

The capital project cost is estimated at \$32.9 million and includes construction, mechanical and electrical, telecommunications, architectural and engineering, project management, and modular data center infrastructure. On completion of the facility renovation, computing equipment will be moved from the existing Local Recovery Center (LRC) in Santa Ana to the Eastern Avenue site.

The CEO's November 26, 2012, "Report on Proposed Bond Financing for Future Capital Projects and County Bond Capacity" included the DR data center project at \$35 million on the project list.

EVALUATION OF DR DATA CENTER SITE OPTIONS

Seismic Evaluation

As reported in November 2012, the County team worked closely with SPA Risk, LLC, contract seismic experts, to assess locations for a secondary DR data center site. The experts evaluated the probability that a single event (e.g., earthquake, fire, flood, etc.) could disable both the planned Downey data center and each proposed secondary DR data center site. Possible DR sites included the Fairplex complex in Pomona, ISD's Eastern Avenue warehouse in East Los Angeles, the Mira Loma/High Desert complex in Lancaster, an ISD Telecommunications site in Pacoima, and the LRC in Santa Ana.

SPA Risk reported there was a low level of risk that a single seismic event would render both the primary and secondary data centers inoperable. When each proposed DR site is evaluated in tandem with the Downey data center, each site (including any proposed building modifications) would achieve the experts' target level of risk of less than 1% of simultaneous operational failure due to earthquake during a 50 year period.

Based on this analysis, the team compared the capital project costs to develop a DR data center site at the various locations. Because the ISD Eastern Avenue warehouse requires less new construction, its initial cost estimate at \$32.9 million is less costly than other sites reviewed. Project costs for other potential sites requiring new construction, and excluding potential land acquisition or development costs, are estimated at \$40.5 million (Attachment I, top).

Cost Comparison of Eastern Avenue to the Local Recovery Center

The team analyzed the 20-year capital and operating costs for the proposed Eastern Avenue site compared to expanded LRC space in Santa Ana.

Los Angeles County's existing DR solution consists of nearly 5,000 square feet of leased space at Orange County's data center in Santa Ana. The existing space is suitable for low-density server technology, which is becoming outdated. To meet future needs, ISD has estimated the countywide DR data center requirement at 120 high-density server racks. This will require LRC space to be expanded to 6,000 square feet, and developed with \$28 million in improvements (e.g., modular cabinets, power modules, chillers, etc.) for high-density computing.

Excluding bond financing costs, the aggregate cost over 20 years for the Eastern Avenue site is estimated at \$32.9 million, compared to \$51.5 million for the expanded LRC in Santa Ana (Attachment 1, bottom). This estimate includes capital upgrades for each facility (e.g., modular technology to attain required power and cooling efficiencies), construction and related costs, and lease costs as applicable. The cost comparison excludes power, cooling, and maintenance costs, which are expected to be similar at either facility based on planned upgrades. Much of the cost difference is due to approximately \$1 million in annual LRC rental costs, which are avoided at the County-owned Eastern Avenue site.

If we include bond interest and financing costs in the above comparison, the 20 year aggregate cost for Eastern Avenue is estimated at \$54.1 million, versus the LRC estimate at \$67.8 million.

POTENTIAL ADDITIONAL OPTION

We recently learned that there may be another viable option for DR data center in another building in downtown Los Angeles. This information is extremely preliminary and we are investigating this potential location. If it appears viable, a seismic study will need to be done for this new location.

CONSTRUCTION TIME ESTIMATE AND LRC LEASE EXTENSION

Should the DR data center be approved for Eastern Avenue, the project can be completed within 18 - 24 months. An additional six months may be required to transition equipment from the LRC to the new DR facility.

The County's existing lease for LRC space expires in November, 2013. Thus, ISD will require a lease extension at the LRC until a new facility can be developed and occupied. ISD will seek the Board's approval to extend the LRC lease with Orange County for two years, with three one-year optional extensions should the DR data center project encounter unforeseen delays.

If the Eastern Avenue site is not developed, then the LRC space will need to be expanded and extensively upgraded with modular infrastructure to accommodate 120 high-density server racks.

OTHER ITEMS

The County team has completed several other critical components of this analysis:

- The CIO has completed departmental system assessments to define their criticality and recoverability following a disaster. The CIO met with IT and business leaders in each department. Based on these meetings and departments' Business Automation Plans, approximately 1,500 computer applications were identified. Departments identified roughly 40% as mission critical for recovery purposes after a disaster. Of these, approximately 9% of mission critical applications have no disaster recovery plans.

Disaster recovery preparedness ranges from very prepared to less than ideal. The CIO will work with departments to develop plans to recover mission critical applications following a disaster.

The benefits attained by meeting with each department included:

- Engaging departments in focused discussions to identify and prioritize the applications that must be available after a disaster, and the recovery objectives in terms of hours or days.

- Counseling departments that host their own applications, or have contractors host them, to think through their disaster recovery plans to ensure the plans are consistent with business requirements. Subsequently, several departments have made changes to their disaster recovery planning, and/or have engaged in disaster recovery discussions with vendors.
 - Advising departments to consider using ISD's shared computing infrastructure to ensure disaster recovery preparedness for their mission critical applications.
 - Providing ISD with a list of tiered mission critical applications that are hosted in Downey, including the recovery objective for each application in terms of hours or days. In case of disaster, having this information will enable ISD to execute a recovery plan.
- IBM has been engaged to compare and validate the County's plans for DR data center operations with IBM's Availability Architecture Framework. A report is expected by February 28, 2013.
- ISD and the CIO have evaluated the current market for cloud-based DR and backup solutions. As previously reported, commercially available DR data center services do not meet the County's needs for a large, complex computing environment. However, the cloud offers viable solutions for tertiary data storage and tape backup solutions that will be considered before renewing backup software agreements or expanding backup infrastructure.
- ISD recently completed a cost comparison of public cloud backup services before deciding to purchase hardware to expand the County's internal computer backup capacity. The public cloud solution was found to be expensive for large customers, over three times the cost over three years, though still feasible for small to medium customers. ISD and some other departments are in the third year of a five-year enterprise agreement for computer backup software and services. Public cloud options will be considered when this agreement comes up for renewal in 2015.
- The CIO has prepared a draft County Directive on server virtualization and consolidation, which is a step toward efficient disaster recovery. The draft is currently being vetted with the CIO Council, CEO and IT Board Deputies.

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The DR data center recommendation was presented to your Board's deputies at the January 17, 2013, Operations Cluster meeting. After receiving feedback from that briefing, the results of the IBM review, and evaluating the new potential site recently identified in the downtown area, we will proceed with next steps to develop a scalable DR data center.

If you have any questions, please contact Scott Wiles at (213) 893-1246 or swiles@ceo.lacounty.gov.

WTF:EFS:SAW:ef

Attachment

c: Executive Office, Board of Supervisors
Information Technology Board Deputies
Chief Information Office
Internal Services

FAIRPLEX vs. EASTERN SITE COST COMPARISON

Description	Fairplex	Eastern	Difference
Construction Cost (including contingency)	\$12,675,958	\$9,488,155	\$3,187,803
Construction Fees (design, permits, inspections, etc...)	\$6,089,113	\$2,958,694	\$3,130,419
Total Tenant Improvement Cost	\$18,765,071 (1)	\$12,446,849	\$6,318,222
Modular Data Center Equipment Cost	\$21,791,630	\$20,488,650	\$1,302,980
Total Cost	\$40,556,701	\$32,935,499	\$7,621,202

Notes: (1) Does not include building purchase / lease costs

LOCAL RECOVERY CENTER LEASE vs. OWN - 20 YEAR COMPARISON

Description	Lease- Orange County				Own - ISD Eastern Ave.	
	SqFt	\$/Sq Ft	Annual	20 Years	SqFt	\$/SqFt Annual
Additional Lease at Orange County (\$12.88/sf/mo)	6,000	154.60	927,600	21,499,514 (1)	15,000	- (2)
Local Support (Xerox/ACS)			87,000	2,011,759 (1)		
Subtotal Lease & Support Costs	6,000		1,014,600	23,511,273		
				1-Time Cost	1-Time Cost	
Orange County Tenant Improvements and Modular Eastern Avenue Tenant Improvements and Modular				27,954,697 (3)		32,935,498 (3)
Subtotal Infrastructure Improvements & Modular Costs			-	27,954,697		32,935,498
Total 20 Year Comparison				51,465,970		32,935,498

Notes:

- (1) Includes 1.5% annual increase in estimated lease payments. Current reflects actual cost. Future reflects estimated cost with added space.
- (2) Hardened space includes: modular rack space, electrical rm, mech rm, storage/office, restrooms; initial modular rack install will occupy approx 6000sf Annual recurring maintenance, power/cooling cost (PUE = 1.4) estimated at \$3.55M (annual power & cooling \$2.8 M; annual maintenance \$750K); same for both sites
- (3) 1-time costs only for comparison, any bond financing will have additional costs.